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Device for weighing load suspended by lifting device on vehicle - has weight transducer fixed to lifting frame which is fastened to horizontal shaft by spherical bearings. (Eng)

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The device (10) comprises a frame (19, 20, 21) suspended from the lifting device for rotation about a horizontal shaft (8). Two pins (22) are arranged on the frame and extend through a force transducer (23) having a circular cross section. A carrier (25) is fixed to the force transducer by a pin (24) and has links (27) connected to it for fastening a load.

The carrier is fixed to the shaft by a spherical bearings (12) which is received in a block (16) which is fastened to the frame for pivoting on a second shaft extending perpendicularly to the first horizontal shaft.

ADVANTAGE - Ensures that lines of force during weighing are parallel to force transducer even if vehicle is not standing horizontally. (6pp Dwg.No.2/2)

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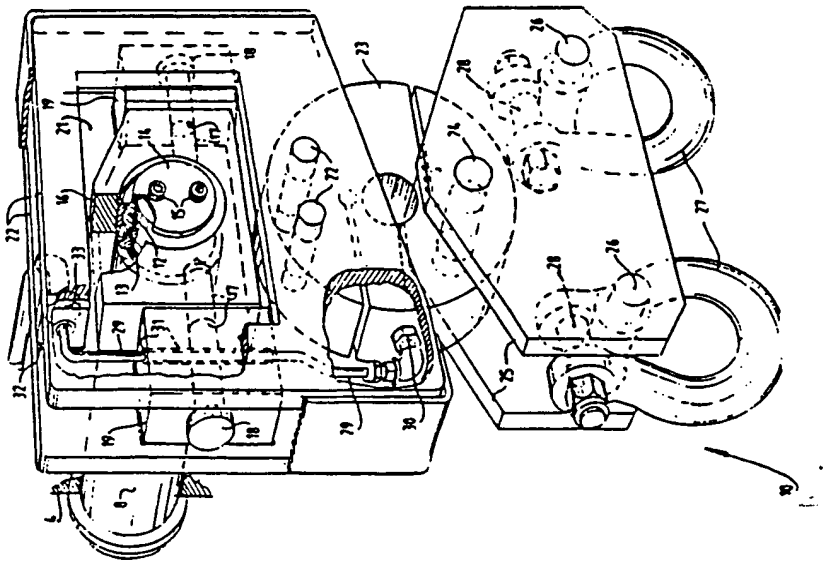

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(71) Applicant: **MOLEN B.V.**
Teteringsedijk 53
NL-4817 MA Breda(NL)

(72) Inventor: **Van Schaik, Frans**
Sluisweg 62
NL-5102 VB Dongen(NL)

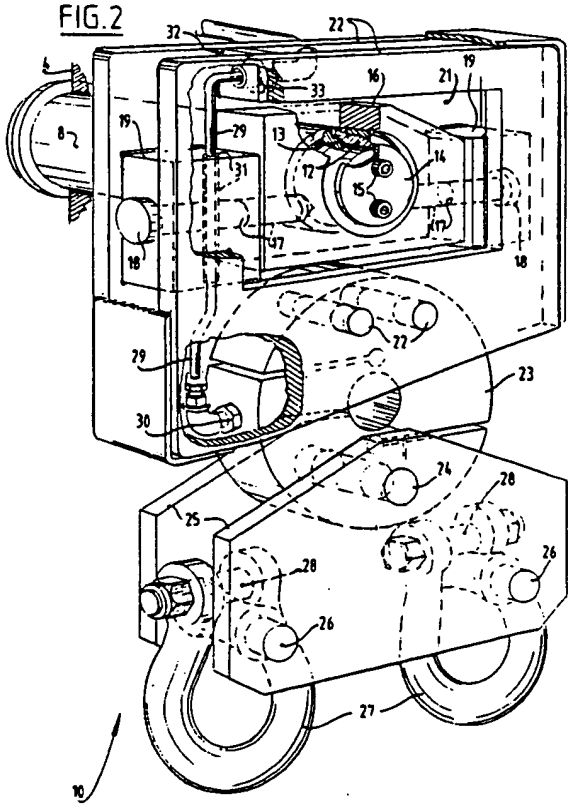
(74) Representative: **Eveleens Maarse, Pieter et al**
Arnold & Siedsma Sweelinckplein 1
NL-2517 GK The Hague (NL)

(54) Device for weighing containers.

(57) The invention relates to a device for weighing a load suspended by means of a lifting device arranged on a vehicle, comprising: a frame suspended from the lifting device for rotation about a horizontal shaft; a weight transducer fixed to the frame; and a carrier fixed to the weight transducer and provided with means for fixing the load, wherein the carrier is fixed to the shaft by means of spherical bearings. The weighing device will thus always orient itself in accordance with forces to be absorbed, for instance during loading of a load placed at an angle behind the vehicle. Damage is hereby prevented and a precise measurement result is obtained during weighing.

In preference the spherical bearing is received in a block which is fastened in the frame for pivoting on a second shaft extending perpendicularly of the first horizontal shaft.

FIG.2



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the transporting of liquids and the like.

The lifting arms 3, 4 are first moved upward from the position shown by means of the hydraulic cylinders 6 respectively 7, whereby the container is carried up therewith. When the container is wholly freely suspended the signal generated by the weighing devices 10 can be read and a measurement ticket printed, or the value of the measurement signal can be stored in a recording device. The container is then moved further until it rests on the appropriate load surface of chassis 5 of the goods vehicle.

The weighing device 10 is further depicted in fig. 2. The weighing device 10 is fastened to a horizontally extending shaft 8 which is fixed to the lifting arm 4. A similar weighing device 10 is of course also arranged on the other side of the truck which is fastened to the shaft 9. A spherical bearing 12 is arranged on the end of shaft 8, wherein the spherical bearing is fixed by means of a shoulder 13 arranged on the shaft and a closing plate 14 which is arranged on the shaft and fixed to the end of the shaft by means of socket screws 15. Fixed around the spherical bearing is a block 16 which, due to the action of the spherical bearing, is attached rotatably about all three axes relative to the shaft 8.

Two holes 17 are bored in the side faces in the block 16, slightly below the centre of the spherical bearing.

Arranged in each of the holes are pins 18 which each likewise extend through a steel block 19. A hole is arranged in each of the steel blocks 19 for this purpose.

A plate 20 is arranged on either side of the steel blocks 19 so that the blocks 19 are mutually connected. The fixing of plates 20 onto blocks 19 takes place for instance by means of welding. In each of the plates 20 a window 21 is arranged at the location of the block 16. Thus a frame construction is created.

On the underside of this frame construction two pins 21 are arranged through the plates 20. These pins 22 also extend through a force transducer 23 having a substantially circular cross section.

This results in a firm connection between the force transducing element 23 and the frame formed by the plates 20.

The force transducer 23 is provided on its underside with a hole through which extends a pin 24. A plate 25 is arranged on both ends of the pin, which two plates 25 are otherwise connected by two thickened pins 26.

The pins 24, 26 can otherwise be connected to the plates 25 by for instance welding.

Arranged round both thickened pins 26 are two harp-shaped links 27 which are closed by a bolt connection 28.

Hooks fastened to chains can be attached to these links 27 for the purpose of lifting the loads in the form of containers.

The provision of the ball joint 12 in combination with the rotation possibility of the blocks 19 relative to the bolts 18 results in a degree of freedom such that the line of connection between the centre of the spherical bearing and the point of engagement of the resultant forces engaging on the links 27 is always parallel to the central line of the whole above mentioned construction. Thus is prevented that moments act on this construction so that damage to the construction is prevented.

Further due to the above stated steps the line of force is also parallel to the direction in which the force transducer performs its measurement. The required accuracy of the measuring device is thus achieved.

A signal cable 29 is otherwise arranged for feeding a measurement signal to the recording device usually arranged in the cab of the truck. According to the invention the signal cable 29, which is connected to the measurement transducer 23 by means of a coupling nut 30, is guided via a bore 31 extending through block 19. The signal cable 29 is further guided through a coupling nut 33 arranged in a reinforcing wall 32. The cable extends therein through a slot arranged in a plate 20 and further along the lifting arm 4 shown in fig. 2 to the chassis 5 in the cab of the truck. The cable 29 is thus guided in the most protected manner possible.

Claims

1. Device for weighing a load suspended by means of a lifting device arranged on a vehicle, comprising:
   - a frame suspended from the lifting device for rotation about a horizontal shaft;
   - a weight transducer fastened to the frame; and
   - a carrier fixed to the weight transducer and provided with means for fastening the load,

   characterized in that the carrier is fixed to the shaft by means of spherical bearings.

2. Device as claimed in claim 1, **characterized in that** the spherical bearing is received in a block which is fastened in the frame for pivoting on a second shaft extending perpendicularly of the first horizontal shaft.

3. Device as claimed in claim 1 or 2, **characterized in that** a pipe is arranged in the frame for at least partially guiding a cable connected to the force transducer.

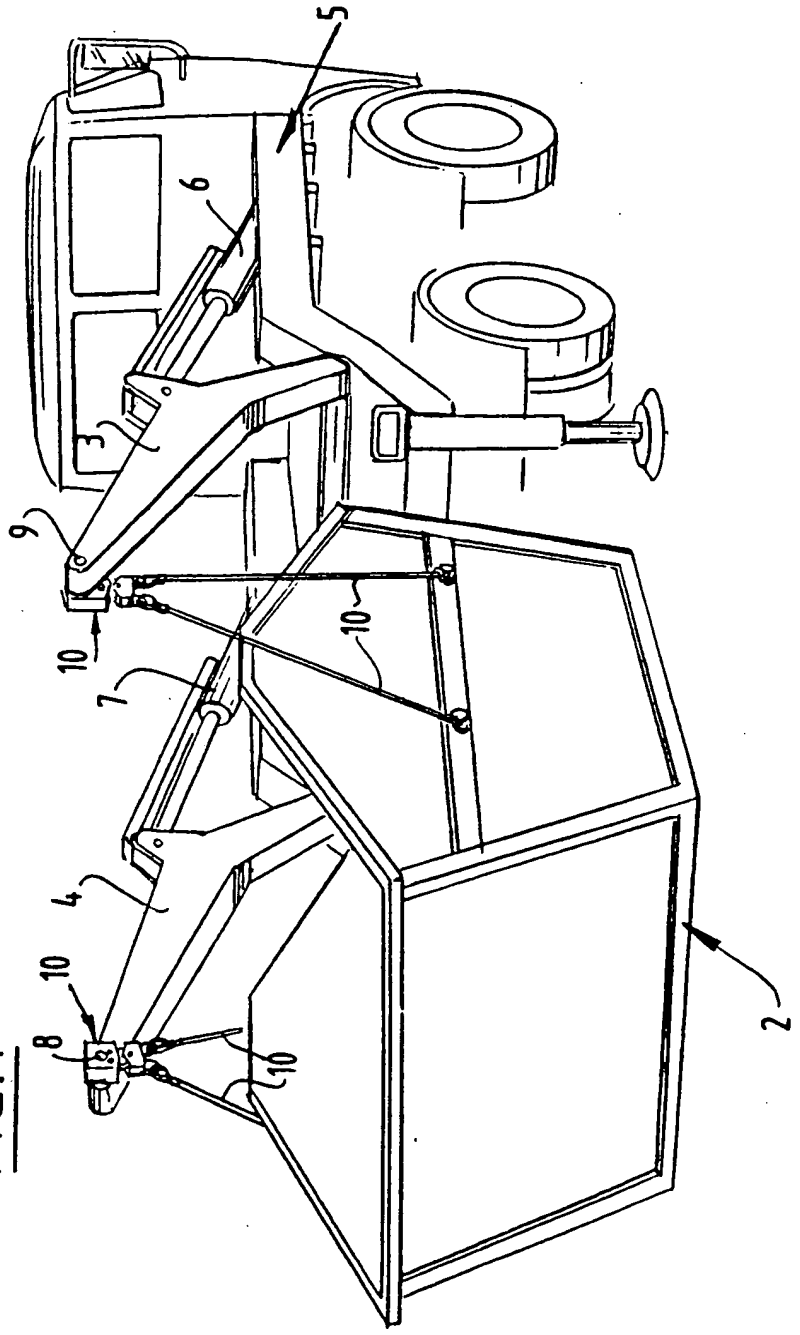
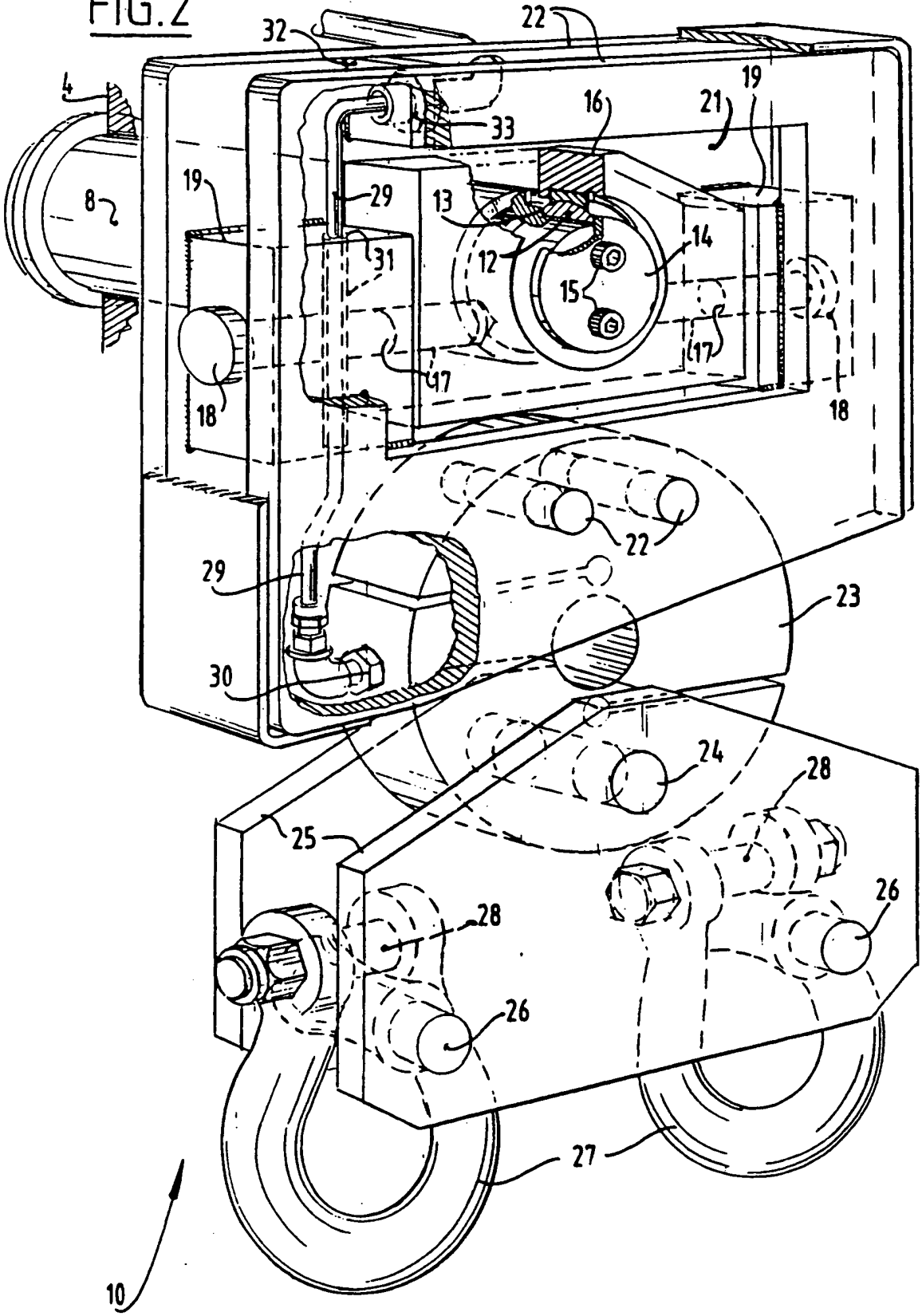


FIG.1

FIG.2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EUROPEAN SEARCH REPORT

Application Number
EP 92 20 3422

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
Y	DE-A-4 026 561 (KONINKLIJKE NOOTEBOOM TRAILERS B.V.) * column 2, line 24 - column 3, line 44; figures 1-5 *	1-4,7	G01G19/12 G01G19/18 G01G21/06
Y	US-A-4 961 470 (C.J. KOERBER,SR.) * column 3, line 10 - line 17; figure 3 *	1-4,7	
A	NL-A-8 202 734 (CARROSSERIEBEDRIJF 'BERDEX') * abstract *	1	
A	DE-C-4 038 374 (S+P WÄGETECHNIK GMBH) * column 3, line 42 - line 48 * * column 5, line 24 - line 48; figures 1-3 *	1	
			TECHNICAL FIELDS SEARCHED (Int. Cl.5)
			G01G

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	11 FEBRUARY 1993	GANCI P.A.

CATEGORY OF CITED DOCUMENTS

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